LIST OF PENDING CLAIMS

1. (Currently Amended) A method for performing a treatment on a volume located at area and depth coordinates of a patient's skin including:

providing a radiation source; and

applying radiation from said source to an optical system providing multiple foci for concentrating said radiation to at least one depth within said depth coordinate and to selected areas within said area coordinates of said volume, said at least one depth and said selected areas defining three ~~dimensional~~ dimensionally located treatment portions in said volume separated from one another by untreated portions of said volume.

2. (Original) A method as claimed in claim 1 wherein the ratio of said treatment portions to said volume is between 0.1% and 90%.

3. (Original) A method as claimed in claim 2 wherein said ratio is 10% to 50%.

4. (Original) A method as claimed in claim 2 wherein said ratio is 10% to 30%.

5. (Original) A method as claimed in claim 1 wherein said treatment portions are one of cylinders, spheres, ellipsoids, solid rectangles or planes of at least one selected size and thickness.

6. (Original) A method as claimed in claim 1 wherein said treatment portions are spaced lines of a selected length and thickness.

7. (Original) A method as claimed in claim 1 wherein said optical system applies said radiation to all said treatment portions substantially simultaneously.

8. (Previously Presented) A method as claimed in claim 1 wherein said optical system applies said radiation to at least said treatment portions sequentially.

9. (Previously Presented) A method as claimed in claim 1 including precooling the patient's skin over said treatment portions to a selected temperature for a selected duration.

10. (Original) A method as claimed in claim 9 wherein said selected temperature and duration for said precooling step are sufficient to cool said skin to at least a selected temperature below normal body temperature to at least said at least one depth.

11. (Previously Presented) A method as claimed in claim 10 wherein said skin is cooled to at least said selected temperature to a depth below said at least one depth, whereby said ~~at least one~~ treatment portions are substantially surrounded by cooled skin.

12. (Previously Presented) A method as claimed in claim 11 including continuing to cool the patient's skin during said applying radiation step.

13. (Original) A method as claimed in claim 11 wherein the duration of said applying step is greater than the thermal relaxation time of treatment portions.

14. (Original) A method as claimed in claim 1 wherein wavelength for said radiation source is selected so as not to be either highly absorbed or scattered in the patient's skin above said volume.

15. (Previously Presented) A method as claimed in claim 1 wherein, for deeper depth coordinates, said optical system focuses radiation to a selected depth below said at least one depth in order to achieve concentration at said depth coordinate in the patient's skin.

16. (Original) A method as claimed in claim 1 including detecting selected conditions in at least one of said volume and the patient's skin above said volume, and utilizing results of said detecting during said applying step to control the treatment portions to which said radiation is concentrated.

17. (Previously Presented) A method for performing a treatment on a volume located at area and depth coordinates of a patient's skin including:

providing a radiation source;

precooling the patient's skin over at least part of said area coordinate to selected temperature for a selected duration, said selected temperature and duration being sufficient to cool said skin to a depth below said depth coordinate to a temperature below normal body temperature, and

applying said radiation to an optical system having a plurality of foci which concentrates said radiation to at least one depth coordinate and to selected areas within said area coordinate to define treatment portions in said volume, said treatment portions being less than said volume, each said treatment portion being within untreated portions and being substantially surrounded by cooled skin separating said treatment portion from other treatment portions.

18. (Original) A method as claimed in claim 17 including continuing to cool the patient's skin during said applying step.

19. (Original) A method as claimed in claim 17 wherein the duration of said applying step is greater than the thermal relaxation time of each treatment portion.

20. (Original) A method as claimed in claim 1 wherein said radiation source has an output the wavelength of which is at least in part a function of said at least one depth.

21. (Currently Amended) A method as claimed in claim 20, further comprising selecting a wavelength of ~~wherein~~ the applied radiation ~~has a wavelength which is selected~~ as a function of said at least one depth as follows:

depth = 0.5 to 0.2 mm, wavelength = 400-1880 nm & 2050-2350 nm~~, with 800-1850 nm & 2100-2300 nm preferred~~;

depth = .2 to .3 nm, wavelength = 500-1880 nm & 2050-2350 nm~~, with 800-1850 nm & 2150-2300 nm preferred~~;

depth = .3 to .5 mm, wavelength = 600 –1380 nm & 1520-1850 nm & 2150-2260 nm~~, with 900-1300 nm & 1550-1820 nm & 2150-2250 nm preferred~~;

depth = .5 to 1.0 mm, wavelength = 600-1370 nm & 1600-1820 nm~~, with 900-1250 nm & 1650-1750 nm preferred~~;

depth = 1.0 to 2.0 mm, wavelength = 670 –1350 nm & 1650-1780 nm~~, with 900-1230 nm preferred~~; and
depth = 2.0 to 5.0 mm, wavelength = 800-1300 nm~~, with 1050-1220 nm preferred~~.

22. (Original) A method as claimed in claim 1 wherein a vascular lesion at a selected depth is being treated, treatment parameters, including the optical system and the wavelength of the applied radiation, being selected so that said at least one depth is the depth of the vessel being treated.

23. (Original) A method as claimed in claim 1wherein the treatment is skin remodulation, by treatment of collagen, treatment parameters, including the optical system and the wavelength of applied radiation, being selected so that said at least one depth is at the depth of interdermal collagen.

24. (Previously Presented) A method as claimed in claim 1 wherein the treatment is hair removal, the treatment parameters, including the optical system and the wavelength of the applied radiation, being selected so that said at least one depth is at the depth of at least one of the bulge and matrix of each hair follicle.

25. (Original) A method as claimed in claim 1 wherein the treatment is removal of one of tattoos and pigmented lesions, said treatment portions being within the tattoo/pigmented lesion being treated, at least two treatments, each with a selected treatment portion pattern being performed.

26. (Original) A method as claimed in claim 1 wherein the treatment acne by damage to sebaceous glands, treatment of intradermal parasites, and treatment of various skin blemishes.

27. (Currently Amended) Apparatus for performing a treatment on a volume located at area and depth coordinates of a patient's skin including:

a radiation source; and

an optical system to which radiation from said source is applied, said optical system providing a plurality of foci for concentrating said radiation to at least one depth in said volume

and to selected areas of said volume, said at least one depth and said areas defining three dimensional treatment portions in said volume within untreated portions of said volume,

a controller for selectively activating said source so as to successively irradiate said plurality of foci.

28. (Currently Amended) Apparatus as claimed in claim 27, wherein said foci are separated such that the ratio of said treatment portions to said volume is between about 0.1% and about 90%.

29. (Currently Amended) Apparatus as claimed in claim 28, wherein said foci are separated such that said ratio is about 10% to about 50%.

30. (Currently Amended) Apparatus as claimed in claim 29, wherein said foci are separated such that said ratio is about 10% to about 30%.

31. (Currently Amended) Apparatus as claimed in claim 27, wherein said foci are configured such that said selected portions of said volume are one of cylinders, spheres, ellipsoids, solid rectangles and planes of a selected size and thickness spaced by a selected distance.

32. (Currently Amended) Apparatus as claimed in claim 27, wherein said foci are configured such that said selected portions of said volume are spaced lines of a selected length and thickness.

33. (Currently Amended) Apparatus as claimed in claim 27 wherein said optical system includes an array of optical elements to at least a plurality of which radiation from said source is ~~simultaneously~~ applied, each said optical element concentrating said radiation to a selected treatment portion of said volume.

34. (Original) Apparatus as claimed in claim 33 wherein each of said optical elements focuses to a line of selected length and thickness, the lines for some of said elements being at a selected angle to the lines for other of said elements.

35. (Currently Amended) Apparatus as claimed in claim ~~27~~ 33, wherein said optical system includes apparatus for scanning radiation applied to said optical elements ~~concentrating components~~ so as to successively focus said radiation to N of said treatment portions at a time, where $N \geq 1$.

36. (Original) Apparatus as claimed in claim 27 wherein said optical system includes adjustable depth optical focusing components, and a positioning mechanism for said optical focusing components which moves the component to focus at successive treatment portions.

37. (Original) Apparatus as claimed in claim 27 including a mechanism which cools the part of the patient's skin at least over said selected area coordinate to a selected temperature, and controls for selectively operating said mechanism to at least one of precool said part of the patient's skin for a selected duration before application of radiation and during application of radiation.

38. (Original) Apparatus as claimed in claim 36 wherein said mechanism and controls precool said skin to a temperature and for a duration sufficient to cool the part of the skin to at least a selected temperature below normal body temperature to at least said at least one depth.

39. (Original) Apparatus as claimed in claim 37 wherein said skin is cooled to at least said selected temperature to a depth below said at least one depth, whereby each said treatment portion is substantially surrounded by cooled skin.

40. (Original) Apparatus as claimed in claim 27 wherein said source generates radiation at a wavelength which is neither highly absorbent nor highly scattering in at least the parts of the patient's skin above said volume.

41. (Original) Apparatus as claimed in claim 27 wherein, for deeper depth coordinates, said optical system concentrates to a selected depth below said at least one depth in order to achieve concentration at said depth in the patient's skin.

42. (Original) Apparatus as claimed in claim 27 including a detector for at least one selected condition in at least one of said volume and a part of patient's skin above said volume, said optical system operating in response to said detector to control the treatment portions of said volume to which said radiation is concentrated.

43. (Currently Amended) Apparatus for performing a treatment on a volume located at area and depth coordinates of a patient's skin including:

a radiation source;

a mechanism which cools the patient's skin over said area coordinate to a selected temperature;

controls for selectively operating said mechanism to at least one of precool said skin for a selected duration before application of radiation and during application of radiation, said mechanism and controls cooling to a temperature and for a duration sufficient to cool said skin to at least a selected temperature below normal body temperature to at least a depth below said depth coordinate; and

an optical system including multiple foci to which radiation from said source is selectively applied, said optical system concentrating said radiation to a depth in said volume and to selected areas of said volume to define treatment portions, said treatment portions being less than said total volume, each said portion being substantially surrounded by untreated and cooled skin,

said optical system further comprising a controller for successively directing said radiation to said multiple foci.

44. (Original) Apparatus as claimed in claim 43 wherein said radiation is applied to said optical system for a duration which is greater than thermal relaxation time of each portion.

45. (Currently Amended) A method for performing a therapeutic treatment on a patient's skin by utilizing a multi-focal optical system to concentrate applied radiation of selected wavelength at a plurality of selected, three-dimensionally located, treatment portions, which treatment portions are separated from one another by ~~within~~ non-treatment portions.

46. (Currently Amended) Apparatus for performing a therapeutic treatment on a patient's skin having a multi-focal optical system for concentrating applied radiation of selected wavelength at a plurality of selected, three-dimensionally located, treatment portions, which treatment portions are within non-treatment portions,

said optical system comprising a controller for successively directing said applied radiation to said treatment portions.

47. (Previously Presented) The method of claim 1, wherein said optical system provides said multiple foci substantially simultaneously.

48. (Previously Presented) The method of claim 1, wherein said optical system provides said multiple foci temporally separately.

49. (Currently Amended) A method of treating a patient's skin, comprising

providing a radiation source,

directing radiation from said source to a plurality of spatially separated three-dimensional treatment portions disposed in a selected volume of the patient's tissue requiring treatment such that different treatment portions are irradiated sequentially over time such that each treatment portion is surrounded by an untreated portion of said volume and said treatment portions comprise a fraction of said volume ranging from about 10% to about 50%.

50. (Previously Presented) The method of claim 49, wherein said step of directing radiation comprises illuminating in a temporal sequence different portions of an optical system which directs radiation to said different treatment portions.

51. (New) A method of treating a selected volume of a patient's skin, comprising:

providing a source for generating radiation, and

focusing said radiation sequentially over time onto selected treatment regions within said volume such that each treatment region is separated from other treatment regions by untreated tissue within said volume.

52. (New) The method of claim 51, wherein said temporally sequential focusing comprises successively focusing said radiation onto a single treatment region at a time.

53. (New) The method of claim 51, wherein said temporally sequential focusing comprises successively focusing said radiation onto a plurality of treatment regions at a time.

54. (New) The method of claim 51, wherein said treatment regions comprise a fraction of said selected volume in a range of about 1 percent to about 50 percent.

55. (New) The method of claim 51, wherein said treatment regions comprise a fraction of said selected volume in a range of about 10 percent to about 30 percent.

56. (New) A method as claimed in claim 20, further comprising selecting a wavelength of the applied radiation as a function of said at least one depth as follows:
depth = 0.5 to 0.2 mm, wavelength = 800-1850 nm & 2100-2300 nm;
depth = .2 to .3 nm, wavelength = 800-1850 nm & 2150-2300 nm;
depth = .3 to .5 mm, wavelength = 900 –1300 nm & 1550-1820 nm & 2150-2250 nm;
depth = .5 to 1.0 mm, wavelength = 900-1250 nm & 1650-1750 nm;
depth = 1.0 to 2.0 mm, wavelength = 900 –1230 nm; and
depth = 2.0 to 5.0 mm, wavelength = 1050-1220 nm.

57. (New) A method of treating a patient's skin, comprising:

irradiating a plurality of spatially separated three-dimensional portions within a volume of the skin requiring treatment for a dermatological condition such that each irradiated portion is surrounded by a non-irradiated portion, wherein said irradiated portions comprise a fraction of said volume in a range of about 10% to about 30%.